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# TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/648,940
Filing Date	08/27/2003
First Named Inventor	LeBras, Philippe
Art Unit	3728
Examiner Name	Gregory Pickett
Attorney Docket Number	D7874

Total Number of Pages in This Submission

## ENCLOSURES (Check all that apply)

<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	MeadWestvaco Corporation, Law Department		
Signature			
Printed name	Tsugihiko Suzuki		
Date	August 1, 2006	Reg. No.	36,321

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Typed or printed name	Tsugihiko Suzuki	Date	August 2, 2006

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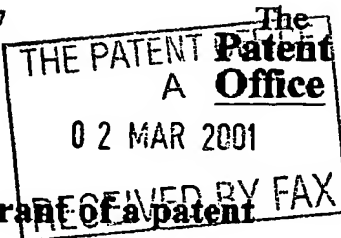
*Stephen Hordley*

Dated 11 February 2002

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## Patents Form 1/77

Patents Act 1977  
Rule 1602MAR01 E610584-1 D01072  
P01/7700 0.00-0105223.2

## Request for grant of a patent

The Patent Office  
Cardiff Road  
Newport  
Gwent NP9 1RH

## 1. Your Reference

APUK019991

## 2. Patent Application Number

0105223.2

02 MAR 2001

## 3. Full name, address and postcode of the or of each applicant

The Mead Corporation  
Courthouse Plaza NE  
Dayton  
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USA

Patents ADP Number

77 2095006

If the applicant is a corporate body, give the country/state of its incorporation

Ohio, USA

## 4. Title of the invention

Carton and Blank Therefor

## 5. Name of your agent

Hepworth Lawrence Bryer &amp; Bizley

"Address for Service" in the United Kingdom to which all correspondence should be sent

Bloxam Court  
Corporation Street  
Rugby  
Warwickshire CV21 2DU  
United Kingdom

Patents ADP number

5608575007 ✓

## 6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and the or each application number

Country

Priority Application Number

Date of Filing

## 7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Date of filing

## 8. Is a Statement of Invention and of right to grant of a patent required in support of this request

Yes

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Description 8

Claim(s) 3

Abstract 1

Drawing(s) 6

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Priority documents

Translation of priority documents

Statement of Inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77) One

Request for substantive examination (Patents Form 10/77)

Any other documents

11. I/We request the grant of a patent on the basis of this application

Signature

*Hepworth Lawrence  
Bayer & Birkley.*

Date

2 March 2001

12. Name and daytime telephone number of person to contact in the United Kingdom.

Rupert Symons (01788) 577000

**Patents Form 1/77**

**DUPLICATE****CARTON AND BLANK THEREFOR**

The present invention relates to a carton and a blank for forming the same. More particularly, the present invention relates to a wraparound carton incorporating a beam  
5 structure adapted to fit in recesses between interconnected cups or pots of so-called brick packages, for example.

Such groupings may constitute a single pair or any other desired arrangement such as two rows of two packages each, two rows of three, four or five packages each or greater  
10 number of rows desired number of containers. Ordinarily, such containers are relatively small and in order to provide for efficient handling during shipment and displays in retail outlets, it is desirable to stack the articles in tiers one above the other.

For the purposes of this article, each cup or pot is considered to represent a separate  
15 article. Some cups or pots are subdivided into separate sections (e.g. yoghurt pots in which the flavouring is in a separate section from the yoghurt).

This invention relates particularly to a beam structure which interconnects a carton side or top wall with its base wall such that the longitudinal axis of the beam is inclined relative  
20 to the plane of the carton's top wall and engages with a recess between adjacent pots. Previous beams have required the carrier to be applied to an upright article grouping from below. Examples of such carriers are disclosed in EP 0 972 718 A1 to Goossens Beauvais and FR 2 423 399 to Calvert.

25 One problem of such carriers is that they are incompatible with conventional wraparound packaging machinery in which the carrier is applied to the article grouping from above or below and is wrapped around the article grouping.

The present invention seeks to overcome or at least mitigate the problems of the prior art.  
30

One aspect of the invention provides a wraparound carton for packaging at least one article, the at least one article defining a recess and the carton comprising a top wall, at

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least one side wall, a base wall and a beam structure being arranged to form a tubular structure so as to encircle the article wherein the beam structure is arranged to be placed in the recess and is hingedly interconnected at one end thereof to the base wall. Preferably, a second side wall may be provided. More preferably, the second end of the beam structure may be hingedly interconnected to the second side wall. Optionally, the second end may be hingedly interconnected to the second side wall intermediate the upper edge thereof and the base of the article.

According to an optional feature of this aspect of the invention the second end of the beam structure may be hingedly interconnected to the top wall of the carton.

According to another optional feature of this aspect of the invention the beam structure may comprise a pair of opposed supporting panels. Preferably, the supporting panels may be separated by a medial panel.

According to a further optional feature of this aspect of the invention the supporting panels may be hingedly interconnected to the adjacent wall panels by bracket panels. Preferably, the bracket panels may be trapezoidal in shape.

A second aspect of the invention provides a blank for forming a wraparound carton for packaging at least one article, the at least one article defining a recess and the blank comprising a base wall panel, side wall panel, top wall panel and beam structure hingedly interconnected in series, the beam structure being arranged so as to engage the recessed portion of the article when the blank is erected to form the carton. Preferably, there may further comprise a second side wall panel hingedly interconnected to the top wall panel. More preferably, a first end of the beam structure may be hingedly connected to the second side wall panel. Optionally, the distance between the fold lines hingedly interconnecting the second side wall panel and the beam structure and top wall respectively may be less than the distance between the top and base of the article to be packaged.



According to an optional feature of the second aspect of the invention the first end of the beam structure may be hingedly interconnected to the top wall panel of the carton.

According to another optional feature of the second aspect of the invention a second end  
5 of the beam structure may be hingedly interconnected to a second base wall panel.

According to a further optional feature of the second aspect of the invention the beam structure may comprise a pair of opposed supporting panels. Preferably, the opposed supporting panels may be separated by a medial panel.

10

According to yet another optional feature of the second aspect of the invention the supporting panels may be hingedly interconnected to the adjacent wall panels by bracket panels. Preferably, the bracket panels may be trapezoidal in shape.

15 Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

FIGURE 1 shows a blank for forming a wraparound carton incorporating a beam structure according to one embodiment of the invention;

20

FIGURE 2 shows an inverted perspective view of the blank of Figure 1 shown having an article introduced thereto;

FIGURES 3 and 4 show inverted perspective views of successive stages of the carton  
25 erection process;

FIGURES 5 and 6 show perspective views a fully erected and loaded carton formed from the blank shown in Figure 1;

30 FIGURE 7 shows a blank for forming a wraparound carton incorporating a beam structure according to a second embodiment of the invention; and

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FIGURES 8 and 9 show perspective views a fully erected and loaded carton formed from the blank shown in Figure 1.

Referring to the drawings, and in particular Figure 1, there is shown one example of a  
5 blank 10 made from paperboard or similar foldable sheet material for forming a wraparound carton according to the invention having a plurality of panels for forming a beam structure 14 provided therewith, for packaging one or more articles. The blank, in this embodiment, comprises in series a first base wall panel 12, the beam structure 14, a first side wall panel 16, a top wall panel 18, a second side wall panel 20 and a second base  
10 wall panel 12 hingedly interconnected in series along fold lines 30, 32, 24, 26, 28 respectively.

The beam structure 14 extends between, and is hingedly connected to the first base wall panel 12 and first side wall panel 16 via a pair of bracket arrangements. Thus, the beam  
15 structure 14 can be interposed between portions of the article(s) to support it.

In this embodiment, each bracket arrangement comprises a bracket panel 34, 36 hingedly connected along one edge to the first base wall panel 12 along fold line 30 and first side wall panel along fold line 32 respectively. Preferably, the bracket panels 34, 36 are  
20 substantially trapezoidal in shape and fold lines 30, 32 are provided along their longest edges. Each bracket panel 34, 36 is hinged along each of its opposing oblique side edges to a pair of gusset panels 42a, 42b and 42c, 42d along fold lines 44a, 44b, 44c, 44d respectively. The gusset panels 42a, 42b, 42c, 42d are substantially triangular in shape in the preferred embodiment. Of course the shape of the bracket panel and/or gusset panels  
25 are not limited to the shapes described above and it is envisaged that other shapes could be used to provide a beam of a substantially inverted "V" shaped cross-section for example.

Gusset panels 42a and 42b are hingedly connected along fold line 46 to first end article support panels 50 and 52 respectively. Likewise, gusset panels 42c and 42d are hingedly  
30 connected along fold line 46b to opposite ends of the second and first article support panels 40 and 38 respectively.

In this embodiment, a medial panel 48 separates the article support panels 38, 40 and is hingedly connected thereto along its side edges along fold lines 50, 52. The medial panel 48 is, in the preferred embodiment, hingedly connected to the shortest edge of bracket panels 34 and 36 by fold lines 46a and 46b.

Turning to the construction of the carton illustrated in Figures 2, 3 and 4, it is envisaged that the carton of the present invention can be formed by a series of sequential folding and gluing operations which can be performed in a known straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements. The articles are shown inverted for clarity.

Referring first to Figure 2 the top wall panel 15 of carton blank 10 is brought into contact with the upper planar face of the articles A by relative vertical motion therebetween. Turning to Figure 3, the blank 10 is then part erected to provide a pair of oppositely disposed side walls 16, 20 by folding side wall panels inwardly about fold lines 24 and 26. The bracket panels 34, 36 are folded out of alignment with first base wall panel 12 and first side wall panel 16, such that first base wall panel overlies the base of the articles A.

The beam structure 14 is constructed by folding first and second support panels 38, 40 along common fold lines 50, 52 into an angular relationship with each other and with medial panel 48, such that medial panel 48 is uppermost. The folding of the first and second support panels 38, 40 simultaneously causes gusset panels 42a, 42b and 42c, 42d to be folded out of alignment with bracket panels 34, 36.

Beneficially, the first and second support panels are automatically folded by virtue of the introduction of the beam structure into the gap between adjacent articles A. For this to be achieved, the width of the medial panel 48 is equal to or less than the spacing between adjacent pots but the overall unfolded width of the beam structure 14 is wider than the

spacing between pots. The intrinsic resilience of the folded paperboard ensures that a snug fit is maintained between the support panels 38, 40 and the articles.

5 Second base wall panel 22 is then folded over the base of articles A and is secured to first base wall panel 13 using glue, or other suitable means known in the art, such as mechanical interlocking means, for example thereby, forming a composite base wall. The carton is now fully erected, as shown in Figures 4, 5 and 6 with a beam of a substantially inverted "U" shaped cross section.

10 It is envisaged that the angular relationship between support panels 38 and 40 can be altered by moving fold lines 44a, 44b, 44c, 44d and/or fold lines 46a, 46b according to particular requirements of the beam structure 14. The bracket panels 34, 36 are not limited to being of trapezoidal shape. In other classes of embodiment, it is envisaged that the support panels may be folded upwardly to form a beam of inverted structure. In some  
15 embodiments, second base wall panel may be extended to cover the entire base, and may potentially be provided with a flap to be secured to first side wall panel 16.

Turning to a second embodiment of the invention as illustrated in Figures 7, 8 and 9, like parts have, where possible, been represented by like numerals with the addition of the pre-  
20 fix "1".

Referring in particular to the blank 110 as illustrated in Figure 7, this embodiment differs from the first embodiment in that the first side wall panel has been omitted and the beam structure 114 is thus hingedly interconnected directly to top wall panel 118 along fold line  
25 132. Additionally, the beam structure has been extended in length to compensate for the omission of the first side wall panel.

Turning to the beam structure 114 in more detail, it can be seen that in this embodiment support panels 138 and 140 are mutually hingedly connected along a common fold line  
30 and further that the gusset panels have been omitted such that support panels 138 and 140 are trapezoidal in shape and are directly hingedly interconnected to bracket panels 134 and 136 along fold lines 135, 139 and 137, 141.

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Turning to the construction of the carton to form a fully set up carton as illustrated in Figures 8 and 9, it is again envisaged that the carton of the second embodiment can be formed by a series of sequential folding and gluing operations which can be performed in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding operation is substantially as described in the first embodiment and results in the blank forming a tubular carton encircling the articles A. Thereafter, first and second base wall panels 112 and 122 being secured together using glue or other suitable means known in the art to form a composite base wall as shown in Figure 8.

The beam structure 114 is constructed by folding first and second support panels 138 and 140 along their common fold line into an angular relationship with each other such that the fold line is uppermost.

Beneficially, the first and second support panels are automatically folded by virtue of the introduction of the beam structure 114 into the gap between adjacent articles A. For this to be achieved, the width of the support panels 138, 140 when in a co-planar state are wider than the space inbetween pots. Again, the intrinsic resilience of the folded paperboard ensures that a snug fit is maintained between the support panels 138, 140 and the articles.

It will be appreciated by those skilled in the art that the combination of a wraparound arrangement with a inclined beam interposed between articles substantially prevents the relative movement of the articles A and carton which may otherwise comprise the automated handling of the cartons and the stacking thereof. Thus, the beam arrangement may be used to replace end retention means which have hitherto been used to prevent relative horizontal movement between articles and carton, but which generally require an additional folding step to be carried out as part of the erection process.

It will be recognised that as used herein, the terms "top", "bottom", "side" and "upper" with respect to the panels of the carton are relative terms, and that the carton may be re-

oriented as necessary or as desired. Any reference to hinged connections should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that a hinged connection can be formed from a score line, a frangible line or one, two or more fold lines without departing from the scope of invention.

5

The present invention and its preferred embodiment relates to a beam structure in a wraparound carton which is shaped to provide satisfactory strength to hold at least one article securely but with a degree of flexibility so that the load transferred to the beam structure is absorbed by the carton. The shape of the blank minimises the amount of paperboard required. The carton can be applied to an array of articles by hand or automatic machinery.

10

CLAIMS

1. A wraparound carton for packaging at least one article, the at least one article defining a recess and the carton comprising a top wall, at least one side wall, a base wall  
5 and a beam structure being arranged to form a tubular structure so as to encircle the article wherein the beam structure is arranged to be placed in the recess and is hingedly interconnected at one end thereof to the base wall.
2. A carton according to claim 1 wherein a second side wall is provided.  
10
3. A carton according to claim 2 wherein the second end of the beam structure is hingedly interconnected to the second side wall.
4. A carton according to claim 3 wherein the second end is hingedly interconnected  
15 to the second side wall intermediate the upper edge thereof and the base of the article.
5. A carton according to claim 1 or claim 2 wherein the second end of the beam structure is hingedly interconnected to the top wall of the carton.
- 20 6. A carton according to any preceding claim wherein the beam structure comprises a pair of opposed supporting panels.
7. A carton according to claim 6 wherein the supporting panels are separated by a medial panel.  
25
8. A carton according to claim 6 or claim 7 wherein the supporting panels are hingedly interconnected to the adjacent wall panels by bracket panels.
9. A carton according to claim 8 wherein the bracket panels are trapezoidal in shape.  
30
10. A blank for forming a wraparound carton for packaging at least one article, the at least one article defining a recess and the blank comprising a base wall panel, side wall

panel, top wall panel and beam structure hingedly interconnected in series, the beam structure being arranged so as to engage the recessed portion of the article when the blank is erected to form the carton.

- 5 11. A blank according to claim 10 further comprising a second side wall panel hingedly interconnected to the top wall panel.

12. A blank according to claim 11 wherein a first end of the beam structure is hingedly connected to the second side wall panel.

10

13. A blank according to claim 12 wherein the distance between the fold lines hingedly interconnecting the second side wall panel and the beam structure and top wall respectively is less than the distance between the top and base of the article to be packaged.

15

14. A blank according to claim 10 or claim 11 wherein the first end of the beam structure is hingedly interconnected to the top wall panel of the carton.

15. A blank according to claims 10 to 14 wherein a second end of the beam structure  
20 is hingedly interconnected to a second base wall panel.

16. A blank according to claims 10 to 15 wherein the beam structure comprises a pair of opposed supporting panels.

- 25 17. A blank according to claim 16 wherein the opposed supporting panels are separated by a medial panel.

18. A blank according to claim 16 or claim 17 wherein the supporting panels are hingedly interconnected to the adjacent wall panels by bracket panels.

30

19. A blank according to claim 18 wherein the bracket panels are trapezoidal in shape.

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20. A wraparound carton substantially as hereinbefore described.

21. A wraparound carton substantially as hereinbefore described with reference to or as illustrated by Figures 1, 2, 3, 4, 5, 6, 7, 8 or 9 of the accompanying drawings.

5

22. A blank substantially as hereinbefore described.

23. A blank substantially as hereinbefore described with reference to or as illustrated by Figures 1, 2 or 7 of the accompanying drawings.

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**ABSTRACT**

A wraparound carton and a blank for forming a wraparound carton for packaging at least one article, the at least one article defining a recess and the carton comprising a top wall, at least one side wall, a base wall and a beam structure being arranged to form a tubular structure so as to encircle the article wherein the beam structure is arranged to be placed in the recess and is hingedly interconnected at one end thereof to the base wall.

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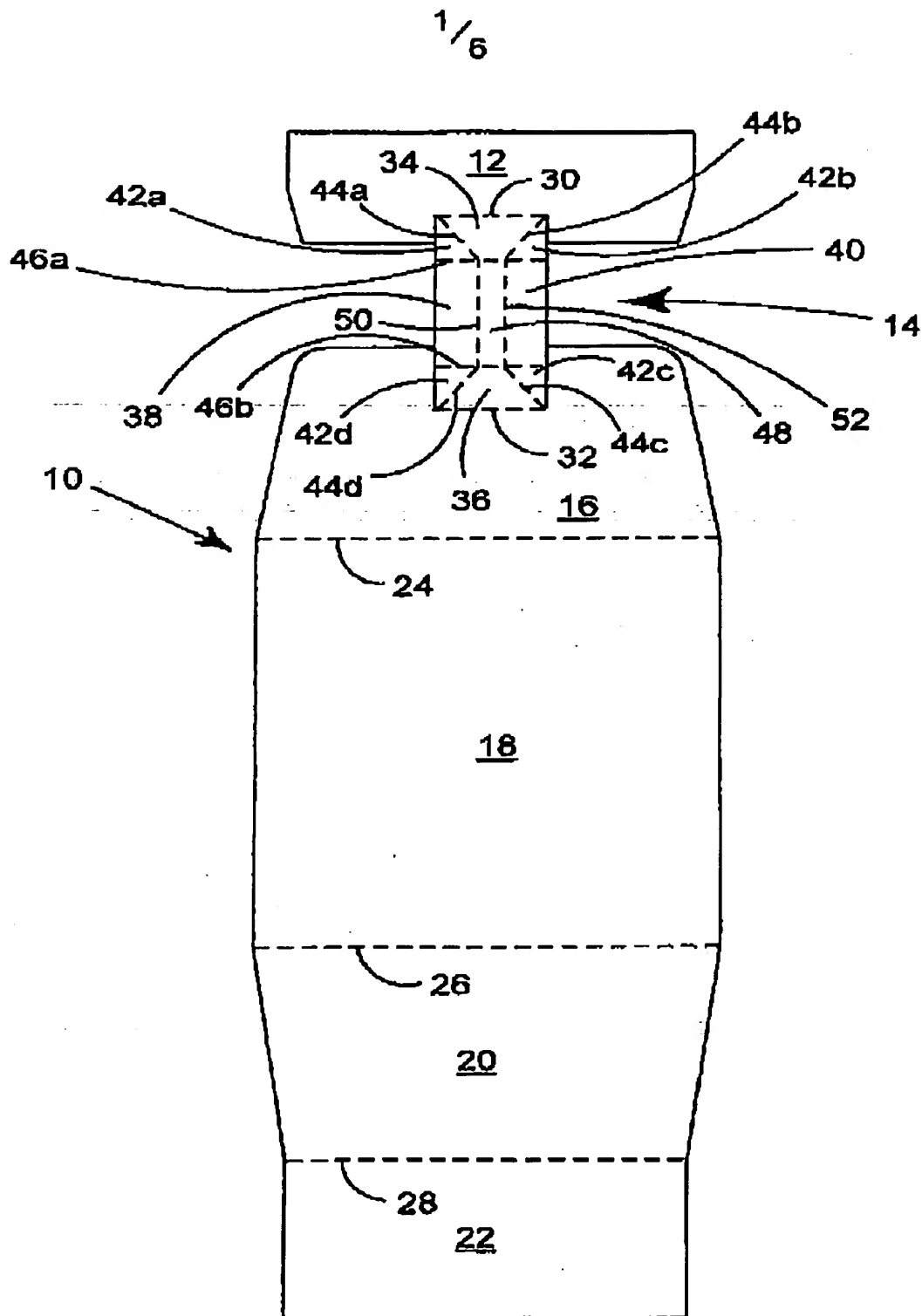


FIGURE 1

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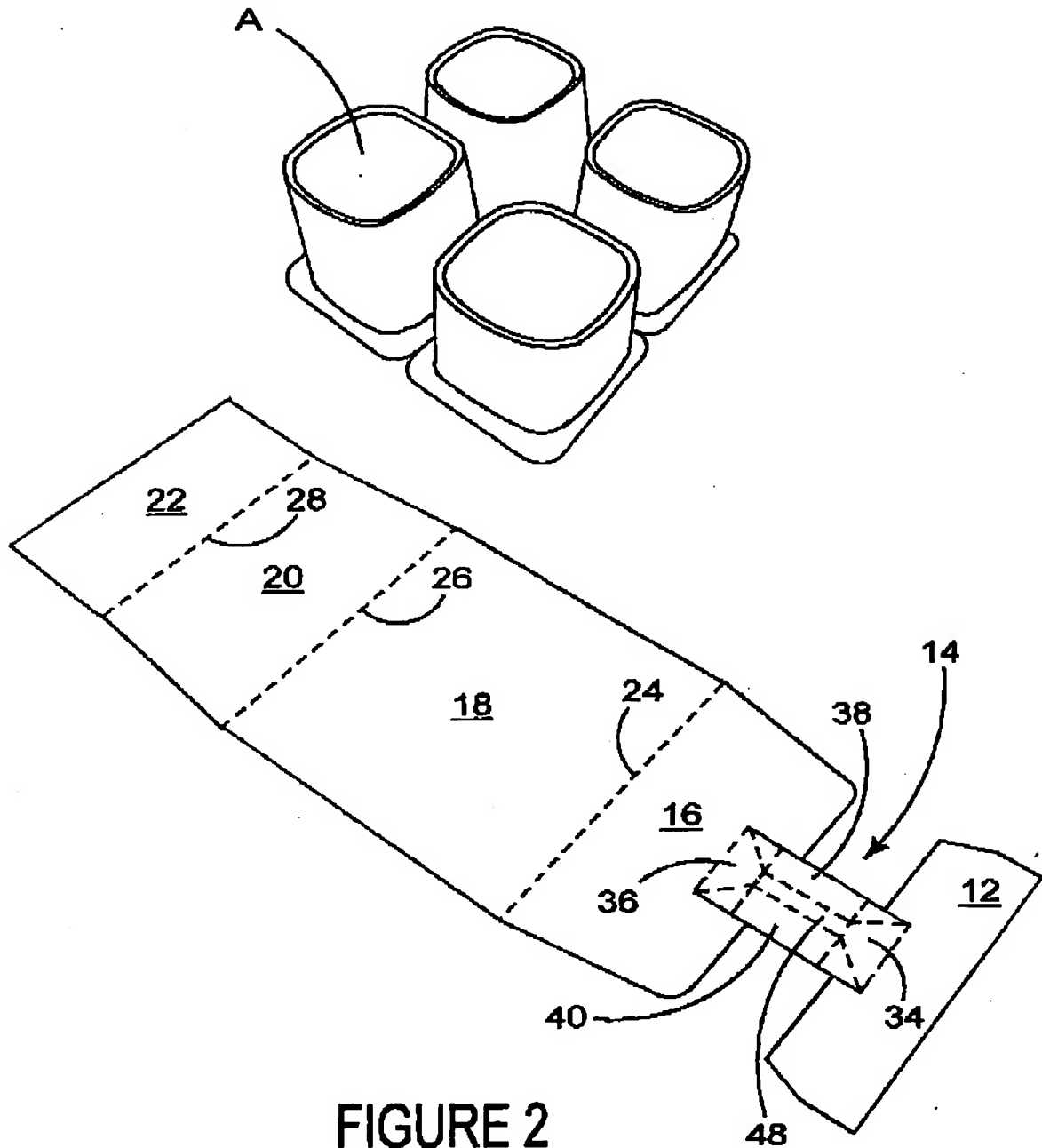


FIGURE 2

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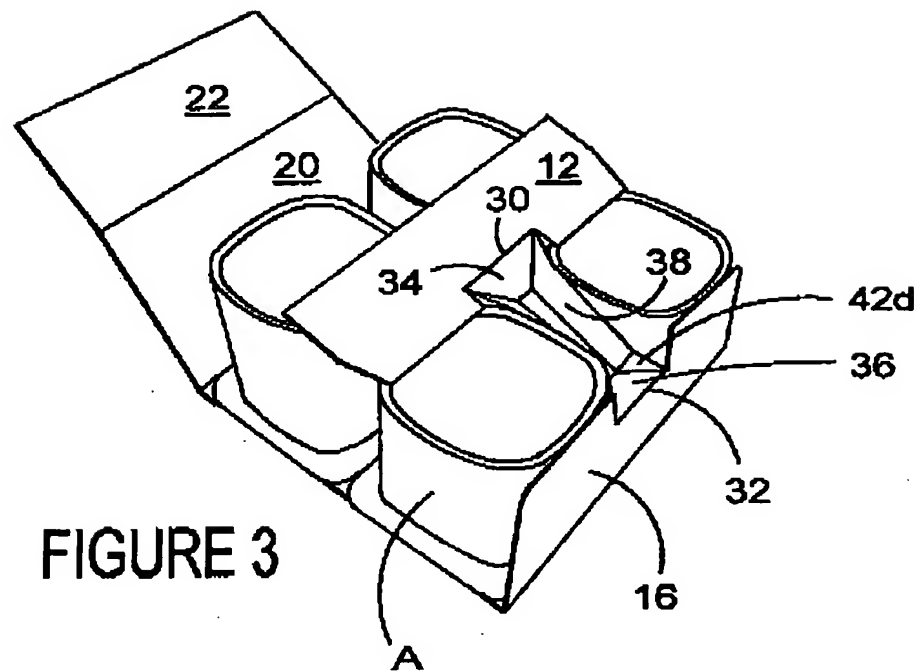


FIGURE 3

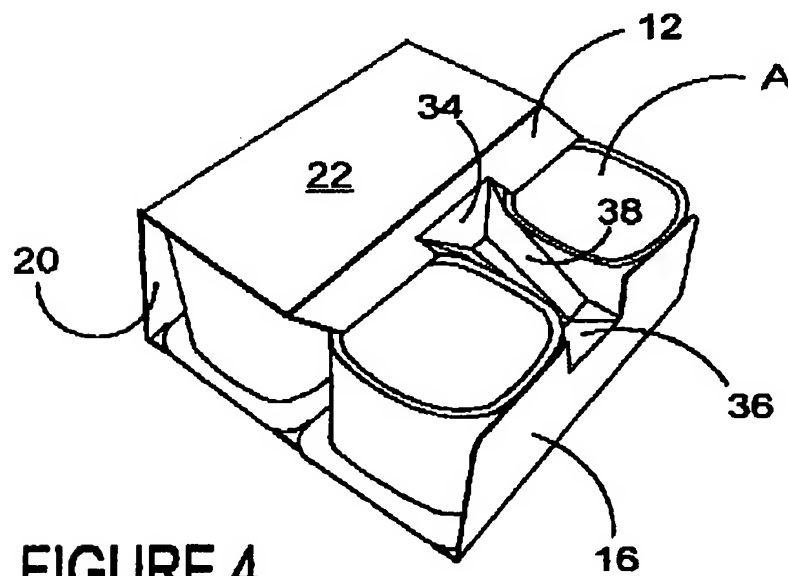


FIGURE 4

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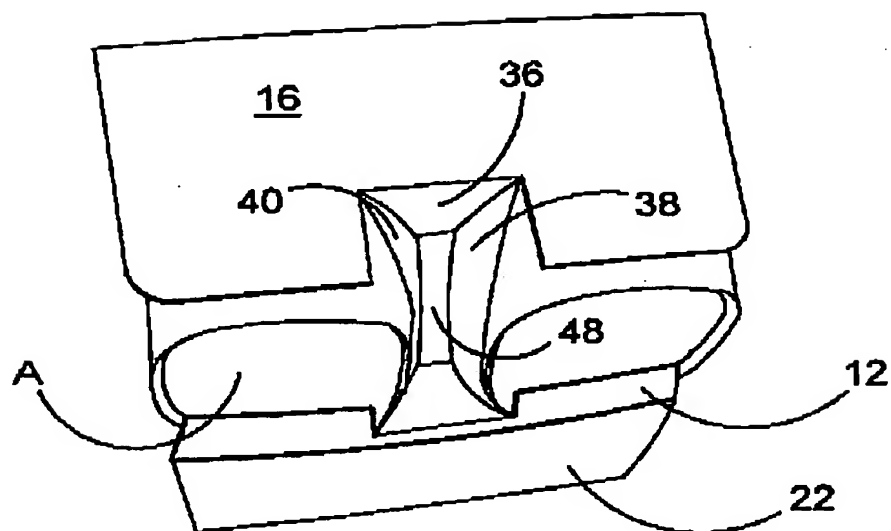


FIGURE 5

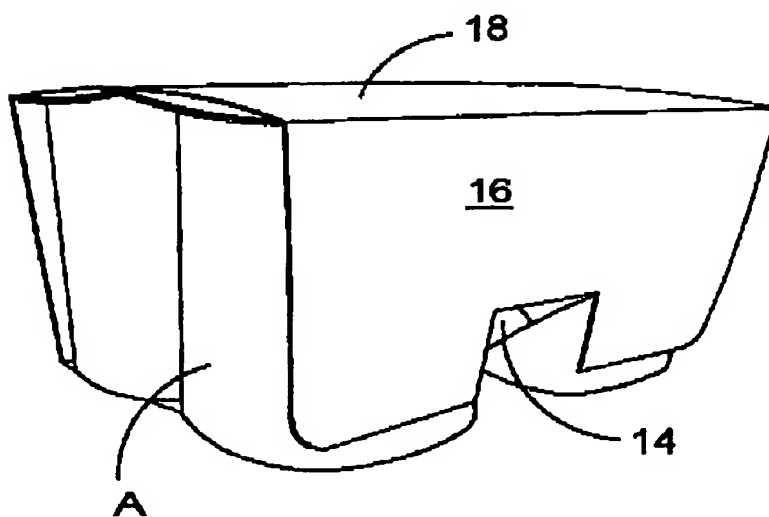


FIGURE 6

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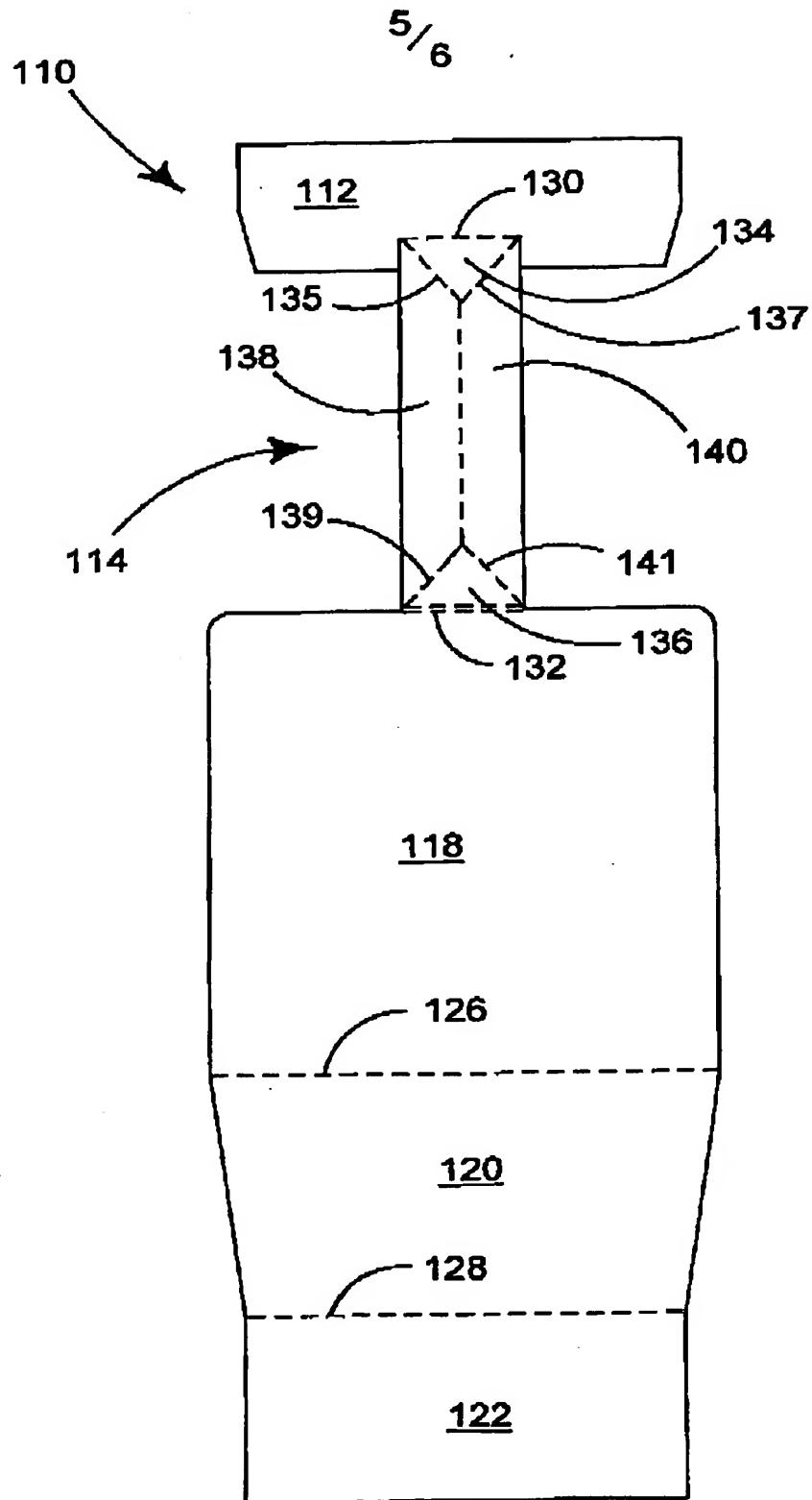


FIGURE 7

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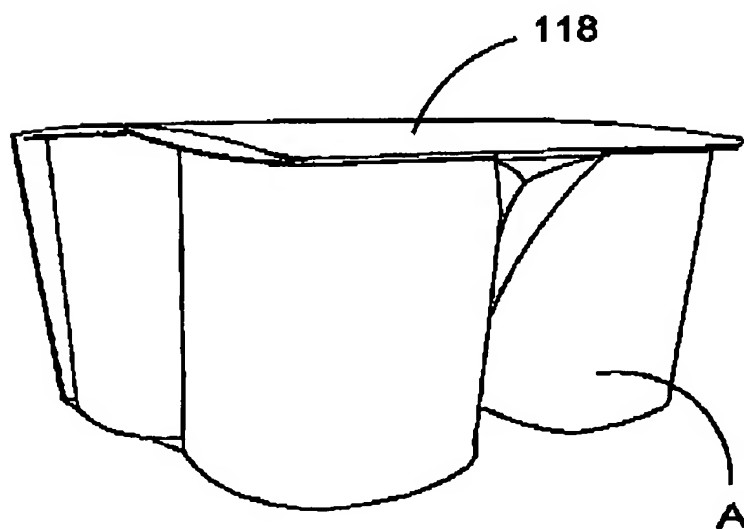
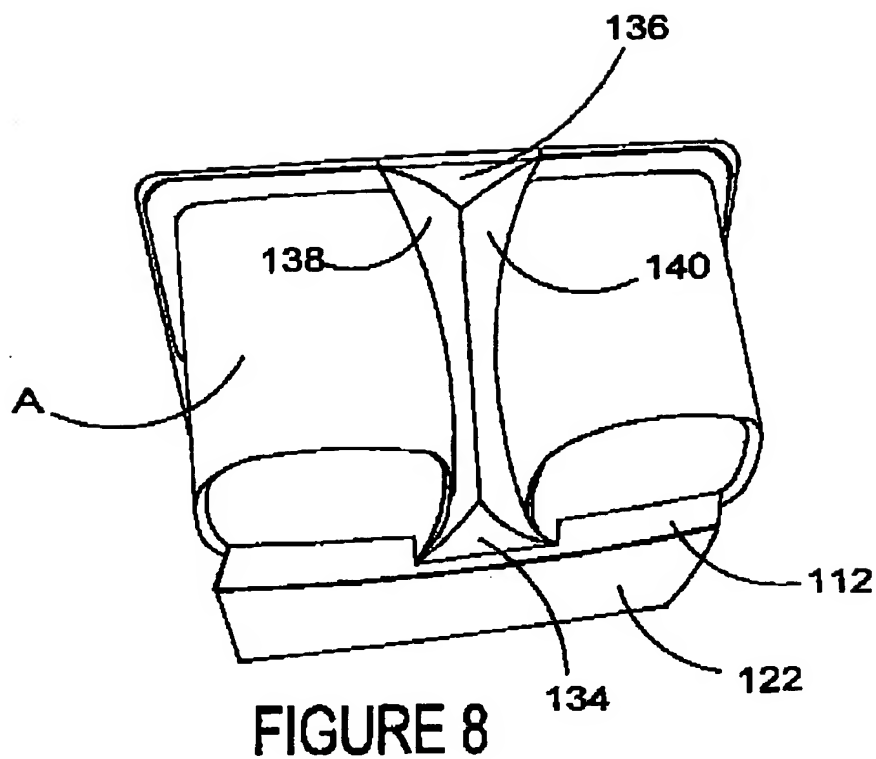


FIGURE 9

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